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An Essay on Burns.

1812

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Preliminary remarks.

In selecting a subject as the basis of a dissertation, no small difficulty arises in the mind of the writer as to the one most suitable to such an undertaking; and also one upon which he is most likely to produce an essay worthy of attention. Therefore every candidate should duly consider the subject upon which he is about to offer his remarks, and ascertain by such reflections in the first place whether or not he be adequate to the task. —

In doing this I find none more worthy of attention; and likewise none upon which I find myself more equal to, than that accident so frequently occurring; which is known by the name of a Burn; to which in many cases surgical aid is essentially necessary. —

The treatment of Burns has not been particularly attended too by any surgical writer; except Mr. Hentish. and I believe those who had spoken of the effects of fire upon the human body previous to him had no just conception of the nature and treatment of such accidents. His having paid more particular attention to Burns in general is no doubt the reason why he has thrown more light upon the subject than any of his predecessors.

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would men in general confine their efforts to a few points, Science would make a more rapid progress tho; there might be less brilliancy attached to individuals; for it is by a division of labours, that perfection is to be attained in the Scientific as well as in the Mechanic Arts. And were we truly to apreciate the matter we should be convinced that there is more Credit in elucidating one uncertain point in the practice of Medicine or Surgery; than in loading many Clear ones with a farago, which by the unexperienced cannot be distinguished, and of which the bad is as likely to be Chosen as the good; and thus would error become perpetual.- And I am sorry to add, that this is too frequently the case. — Pardon this digression from the Subject.

Having heretofore observed that Mr Kentish appeared to have had the best notions Concerning Burns; it must not be inferred, that I would apeal him; to be altogether free from error: far from it, for in Some instances he appears to carry his Theory too far, and by that means has done more harm than good. —

In the Composition of the following sheets, I am not certain that any thing either new or interesting will be Said, upon a Subject, which many Modern Surgeons have bestowed considerable attention upon. —

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However as it is a duty incumbent upon every candidate for a Medical-degree; by a law of this honourable institution: I shall proceed upon the detail of my remarks, without saying as is generally if not always done by the writer; excuse my in-adequacy — the short time allowed me in the pre-paration of the following sheets — my juvenile mind &c — with many other sentances of the like, in all amounting to self-praise, indirectly applied, which is disgusting to a mere reader. And I ask how does it appear to professors in the University of Pensylvania? — —

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Burns. —

A Burn may be defined; an injury occasioned by the application of heat so far superior, to the natural temperature of the body; as not to be borne without the fibres or organization of the part being hurt. —

Burns have been divided by writers in many ways but I shall not adopt their divisions in this essay; but speak of them as they are more or less influenced by the following five circumstances. viz — 1st The Intensity of heat applied. 2. The nature of the part affected. 3. The nature and peculiarity of the body producing the injury. 4. The length of time it is kept in contact. 5. The extent of surface. —

It is necessary that these should be particularly attended to; I lay them down as so many primary propositions and they appear more or less in all Burns. There are some others such as age &c; which however are of minor consequence. —

Dr. Physick has divided Burns into three grades; which I shall include under the first head that was noticed above: each influential circumstance related above will be distinctly spoken of — a few observations on the nature & peculiarity of the inflammation attending Burns

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Burns; and lastly the treatment that is most approved of. — —

1st. Intensity of heat applied. under this I include 1st redness or inflammation of the surface only. 2. blisters are formed causing a seperation of the cuticle under which serum is effused. — 3. The complete death of the part forming an eschar like that which is produced by Caustic: this takes place when the heat has been intense; the two former from less degrees of it. When the part is entirely destroyed the patient does not feel great pain until after 3 or 4 days when the process of sloughing takes place, then the inflammation arising for the seperation of the dead part from the living is great and the pain very distressing. —

In confirmation of this, Dr. Physick relates a case of a boy, who fell into a kettle of boiling water in a Soap-Manufactory. and when interrogated concerning his feelings he answered that he felt no pain; here the heat was kept applied so long as to destroy all sensations. In these cases, the symptoms arising are very alarming: such as coldness of the extremities, coma, and restlessness which generally terminate fatal. — —

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2. The Nature of the part affected.

This has a very great influence over all Burns and should be particularly attended to; Burns are most dangerous when seated upon the head, and over large joints, in the former they sometimes occasion inflamations of the dura-Mater and thus disturbing the functions of the brain; produce violent symptoms as pain, delirium, Coma, Syncope and not unfrequently death. And in the latter Hectic-fever, with all its horrors, arises and the life of the patient is so much endangered as to render Amputation indispensibly necessary for his recovery. While, on the Contrary, when seated upon the trunk of the body, or either of the extremities, such symptoms very seldom, if ever, occur (all other Circumstances being alike); and the cure, at the same time, is more easily accomplished. —

3. The Nature and peculiarity of the body producing the injury. — Under this head come Scalds, which are of the nature of Burns, except in the body that produces the injury; Scalds are not so alarming as injuries produced by many other Substances, for this obvious reasons, that fluids are

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not capable of acquiring so high a temperature as Metals, and some other hard Substances. —
Heated Metals cause very serious Burns in their termination, or after a time which at first appeared of no consequence; for frequently the Skin and Muscles slough off and leave the bones bare: Hectic fever ensues, and life is destroyed. —
Burns occurring in the different Manufactories of Europe, wherein some poisonous Metal is concerned; such as Arsenic and the like are most undoubtedly more dangerous in their tendancy than Burns occasioned by a common Metal heated to the same degree: however such Burns rarely if ever occur in the United States therefore they do not demand our immediate attention. —

Burns from explosions of Gun-powder are not infrequently productive of serious consequences, in such cases most commonly the grains of powder are forced into the surface of the injury which must necessarily produce some degree of irritation; they are advised in all cases to be extracted: but this would be a very injudicious practice for certainly if the particles where numerous the irritation produced by an attempt to extract them would far exceed that of their being left in the part, —

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therefore they should only be extracted when seated upon the face and hands, in which place they would tend to produce deformity, and even in this case they are frequently brought away with the dressings so that it is hardly if ever necessary to follow the advice of the older Surgeons, unless it can be done with very little force.

4th The length of time it is kept in Contact. This Materially influences the nature of Burns, for instance; bodies possessing an intense degree of heat, if not kept long in Contact; do not cause Burns of so alarming a nature as degrees of heat somewhat inferior kept applied for a considerable length of time. This I assume as a fact, and it has I believe been fully established by the Observations of Many Surgeons.

5th The extent of Surface.

It is particularly worthy of remark that the danger arising from the effects of fire is more proportionate to the extent of the injury than the depth. As a Burn that is so violent as to kill the part immediately may not be in the least dangerous if not extensive; while a Burn that is not deep, but very extensive may prove Mortal.

This circumstance Dr. Physick makes particular mention of, in his course of invaluable lectures.

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Burns affect old people more than young, tho at times they prove fatal at all ages; they are very dangerous in persons of dropsical habits, owing to their great tendancy to Mortification: also in persons whose constitutions have suffered much from previous or existing diseases as Scrophula &c.

To conclude these remarks on the nature of Burns, it must be observed, that the danger is to be rated according as a greater or less number of the circumstances before mentioned are present at the time of the injury. —

Of the Nature of Inflammation from Burns.

That the inflammation from Burns is different from all other inflammation, I infer from the following facts.

1st. The pain is entirely different from that attending the other kind; it being of a burning nature and infinitely more distressing to the patient who suffers it. —

2d. It may be inferred from its having no disposition to resolve; and its having or causing ulceration of the parts underneath which throw up fungous granulations and ~~which~~ are very hard to suppress. —

3d. The Cicatrices formed by ulcers resulting from Burns have a greater disposition to contract than those from other inflammation and causing thereby

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4th It is rendered evident from the mode of cure being entirely different, as Stimulants in inflammation from Burns being used with the effect of producing a cure; while the Antiphlogistic plan is pursued in other inflammation with success: And where either Method of treatment reversed it would prove highly injurious, and ultimately very dangerous. —

5th It may be inferred from the inflammation in Burns taking place instantaneous; while that from other causes, as Cold &c, does not, for in many instances a considerable time elapses.

6th I infer it from the cause itself being totally different; for certainly it will not be said that there is any resemblance between heat and Cold or Mechanical Violence. —

7th And lastly, it is rendered probable, perhaps; from the circulation in inflammation from Burns being slower while that otherwise induced is accelerated. This is my own opinion, I would not assert tho, that the circulation in any inflamed part is slower because I do not think that it can be satisfactorily proved; but merely mention this in order to explain the action of Stimulants.

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of Stimulants in producing a cure; cannot be explained neither will it admit of any problematical reasoning. —

Let it not be understood that I mean in all degrees of heat that this is applicable to; far from it: but only in such as are of a higher degree, and go to derange the organization of the part in some measure. —

I might go on, and swell this essay far beyond the limits which I had intended, and give much reasoning in proof of the difference between the two inflammations; but these I deem sufficient.

The Seventh and last fact (if it be one) alone, in my mind: goes to substantiate it sufficiently, were I destitute of all others. —

Treatment of Burns.

The treatment of Burns necessarily resolves itself into two kinds: viz Constitutional and local. —

The former plan of treating Burns was founded upon principles, which seemed applicable to cases of inflammation in general; it was most commonly Antiphlogistic and even copious bleeding from the arm was not infrequently practised and it appears to me from what I have seen in Books upon the Subject — that

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that cold and hot, irritating and soothing, astringent and emollient applications have all been outwardly employed in cases of Burns without much discrimination: and in many cases to the no small injury of the patient.

The plan of treating Burns has been so various, and such a multiplicity of applications recommended by the different writers upon it, that I find it next to an impossibility to give a precise and regular account of it. Therefore, I shall place my remedies and [redacted] remarks as they occur to me; not pursuing any methodical arrangement.

If the heat applied to a part induces inflammation of surface only; without vesications or the complete death of it, the remedies to be employed are the following: Cold water, or rather Ice if it can be procured: the this application was not first brought into use by Mr. Earle (it having been long used before he published upon the subject), yet from his having more particularly recommended it, and also from his exclusively advising the use of it, he has, certainly, a considerable claim to our praise.

He has brought forward several cases of extensive and dangerous Burns, in which it was employed with the happiest effects; he observes that if the part is so situated as to be plunged into the

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the cold-water, it should be done. If not, rags dipped in it should be applied over the whole surface and renewed as often as it acquires warmth from the part. It must be continued as long as heat and pain remain, which in many cases is for a considerable length of time. —

If it should produce trembling and chillness, he advises it to be discontinued, and resort to other remedies; but these effects I believe, continues he, seldom occur. —

Another remedy very highly recommended in Burns, and which I believe to be more efficacious than the one last described, is the application of vinegar, so much recommended by Mr. Cleghorn. It should be continued, says this gentleman, till the pain is abated and the redness somewhat lessened, taking great care, in cold weather, to warm it a little; the part injured may be either thrust into it, or rags may be wet and applied in the same manner as recommended when speaking of cold-water. —

After this, I might mention Sulphuric Acid: it has been recommended as a substitute for vinegar, but should never, I believe, be used where other ~~the~~ remedies can be had access to.

In reading Mr. B. Bell some time since, I observed that he recommended plunging the

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the injured part into boiling water suddenly, to procure ease as he supposed it would: but this is a recommendation highly dangerous and not likely to be immitated; at least not at this advanced period of Medical Science. —

In some cases emollients have afforded immediate relief; but, in general, astringent applications are best; such as brandy or alkohol; the part should be immersed if convenient, if not old linen rags wet in the liquid should be kept constantly on the burnt surface; saturnine solutions, as that of Goulard's extract and Saccharum Saturni, have been much spoken of; also a strong solution of Alum, but if excoriation of surface is present, all kinds of lead applications should be avoided for reasons obvious, which shall be more particularly spoken of in another place; a strong solution of Alum is probably the best astringent we are acquainted with; beside these as remedies employed in Burns are used by the common people; scraped-potatoes, Turnips, Molasses, and moist & cold earth: this last, I conceive, might be efficacious, supplying, in some measure, the action of Ice or cold, in any shape. —

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What has been said on the Treatment of Burns is applicable to the first Stage or that which takes place before Blisters arise; but is of small con-
-sequence in Burns of any considerable extent. -

If inflammatory Symptoms should run high, evacuating remedies should be had recourse to, such as blood-letting, purging, or rather injections; for this reason, that purges weaken the patient more; and it is also very inconvenient to those labouring under a Burn of some extent to be getting up and going to stool. —
Blistering should be employed, low-diet, & rest, but if on the contrary the inflammatory Symptoms are inconsiderable and there should be fever and great weakness from irritation; prescribe Lauda-
-num, wine-whey, nourishing diet, cordials, Bark, Bitters, &c, these last are constitutional remedies & to say a great deal in a few words, the constitutional treatment must be accommodated to the state of the System, and like it vary considerably. - —

Where the burnt part is, from the first, attended with blisters upon the surface, or where more or less destroyed by the Calorific Action, cooling emollient applications where formerly thought as most effectual, and a liniment composed of equal parts of lime-water and linseed-oil-

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gained the greatest celebrity, and even at this day it is much used, and I believe it is applicable to certain Burns; it should be put on when used with a camel-hair brush for the application and removal of the slightest dressings often give pain and increase irritation considerably. Beware, as I have said before, of any lead-applications, for the most superficial observer will perceive that this is a very dangerous and highly precarious practice; for it would (if continued any considerable time) be taken up by the absorbents and carried into the system, and a production of Calica-pictonens would be the consequence; the same remarks are applicable to an ointment, sometimes used, made of stramonium and lard, which should hardly if ever be employed. —

The blisters that arise from Burns, says a certain author, should never be opened till after the inflammation has subsided; but this ~~is an error~~ very palpable; for if the inflammation should continue for a considerable length of time, which in many instances is the case, and the serum ~~[illegible]~~ were allowed to remain

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remain in the bladder, it would inevitably produce a considerable ulceration of the parts in contact, so that it should always be evacuated early. Small punctures; not large incisions, should be made.

The remedies that have been spoken of are but of small consequence when compared to the ones now about to be recommended. It is the plan of treatment by Mr. Kentish alluded to; the applications recommended and first employed by this gentleman, are the following, viz - alkohol, the fluid bol: alk: Ether, Spirits of Turpentine, these so employed as to prevent speedy evaporation these I believe are the chief be employed in cases of burns.

The injured surface to which these applications are to be made should be bathed two or three times over with the rectified spirits of wine either simple or combined with camphor or spirits of Turpentine heated by standing in hot water. The liniment compound of the common yellow-basilicon softened with spirits of turpentine is then to be spread upon old linen rags and applied over the whole of the injured surface. The yellow ointment

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Stops the pores of the cloth, impedes evaporation and thus confines the effect of the alkohol to the burnt surface.

The first dressings are to remain on four and twenty hours. Mr. Kentish thinks it of importance that the injured surface should be left uncovered as little as possible. It is therefore recommended to have plasters ready spread before removing the old ones, and then only to take off one piece at a time. —

It will seldom be necessary to repeat the application of alkohol a second time, or that of the turpentine either; but if it should be found necessary, it may be continued till suppuration has taken place. Then, less stimulating or irritating remedies will be found best, as the unguentum resinae flavae, combined with oleum camphoratum, instead of the turpentine, and if this should be found too irritating, you should employ the ceratum lapidis calaminaris; or the unguentum saturninum, made weak.

Dr. Physick has a very high opinion of the Basilicon and spirits of turpentine, and remarks that in applying it care should be had that it be only upon the burnt surface; for if it should-

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touch the sound parts violent inflammation will ensue, and it is from this circumstance of carelessness and inattention among physicians, that they have supposed this remedy as injurious and he also says that when properly applied he always found it effectual. This commendation alone is sufficient to establish the great usefulness of the remedy.

But there is a remedy which I would particularly advise all practitioners to employ, and which I think to be more important than the Spirits of turpentine; that is the Tincture of Cantharides, combined with the unguentum resinae flavae, instead of the Turpentine. —

Whilst a student of Medicine, I have had an opportunity of seeing many cases of Burns, and several in which this remedy effected a cure. It is applicable to all cases of Burns where you would employ the Turpentine; but from reasoning a priori, we should expect to find suppression of Urine induced: but this I have never known. It should not be made quite so strong as that commonly prepared. —

The sores formed by Burns are, perhaps, more disposed to form large granulations, than any others, which rise considerably above

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the surrounding skin, they should in this case, 20
be dressed with any moderately stimulating as-
-tringent ointment, as the Basilicon combined
with red precipitate; and if the part will allow
of the application of a roller, the pressure will
be of immense service in keeping down the
granulations and rendering them more healthy.
Where this method fails, the sore should be gently
rubbed with the argentum Nitratum. —

In cavities of seperated eschars, and in the
furrows formed between sloughs and the living
parts, Mr. Kentish introduces powdered chalk.—
Then a plaster is applied, and in very tedious cases
a poultice over the whole. —

Powdered chalk is likewise to be employed
in repressing the growth of exuberant gran-
-ulations before spoken of; and also to absorb the
redundant secretion. —

Burnt parts, which are contiguous, are
very apt to grow together in the progress of the
cure, as the fingers, toes, eyelids, and sides of the
Nostrils. In order to prevent this, the dressings
should always be kept between them, untill
the cure is completely performed. —

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Dr. Physick, the dressings should be applyed between them; they are then to be extended upon a Splint; this is also applicable to Burns on the fore-arm or leg. —

Burns in the neck are frequently followed by such a contraction of the cicatrix, that the head becomes drawn to one side. This deformity may be lessened, tho it cannot always be prevented by position. —

I have not discussed or descended very minutely into the treatment of Burns: for in all cases, the method of cure must vary with the different existing circumstances.

With this, preceptors in Medicine, I take my leave; wishing a continuation of your health, happiness, and useful labours. —

Finis.

Wm. Thurston
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